NOTES 01: DATA

Stat 120 | Fall 2025 Prof Amanda Luby

]	I The Structure of Data
	Cases
	Variables
	2 Types of Variables
	Quantitative
	Categorical
	Explanatory
	Response

3 Examples

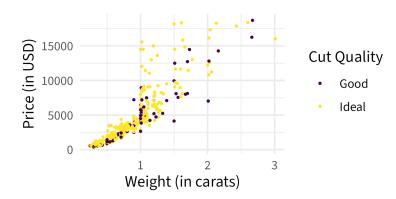
Label the cases and variables. For each variable, state whether it is categorical or quantitative. Indicate if there's clear response or explanatory variables

3.1 Penguins

# A tibble: 344 x 8								
S	species island		bill_length_mm	bill_depth_mm	flipper_length_mm	body_mass_g		
<	cfct>	<fct></fct>	<dbl></dbl>	<dbl></dbl>	<int></int>	<int></int>		
1 A	delie	Torgersen	39.1	18.7	181	3750		
2 A	delie	Torgersen	39.5	17.4	186	3800		
3 A	delie	Torgersen	40.3	18	195	3250		
4 A	delie	Torgersen	NA	NA	NA	NA		
5 A	delie	Torgersen	36.7	19.3	193	3450		
6 A	delie	Torgersen	39.3	20.6	190	3650		
7 A	delie	Torgersen	38.9	17.8	181	3625		
8 A	delie	Torgersen	39.2	19.6	195	4675		
9 A	delie	Torgersen	34.1	18.1	193	3475		
10 A	delie	Torgersen	42	20.2	190	4250		
# i 334 more rows								
# i 2 more variables: sex efets year sints								

i 2 more variables: sex <fct>, year <int>

3.2 Price of diamonds by carat and cut quality



3.3 Is there a "Sprinting Gene"?

A gene called ACTN3 encodes a protein which functions in fast-twitch muscles. Some people have a variant of this gene that cannot yield this protein. To address the question of whether this gene is associated with sprinting ability, geneticists tested people from three different groups: world-class sprinters, world-class marathon runners, and a control group of non-athletes. In the sames tested, 6% of the sprinters had the gene variant, compared with 18% of non-athletes and 24% of the marathon runners.

Sketch out a possible dataset, and then answer the questions.